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Customer No. 20462
Confirmation No. 3697

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Hans Kraemer
Serial No.: 10/566,118
Filed: September 25, 2006
For: Toothbrush

July 7, 2011
Group Art Unit: 3727
Examiner: Mark Spisich

Commissioner for Patents
Alexandria, VA 22313-1450

COMMUNICATION

Dear Sir:

Applicants hereby submit the attachments referenced on page 5 of the response filed on July 6, 2011, in connection with application number 10/566,118. These attachments were inadvertently not submitted with the response.

Applicants believe that no fees are required for the submission of these papers. However, authorization is hereby granted to charge any fees, which may be required by this paper, to Deposit Account No. 19-2570.

Respectfully submitted,

/Joshua C. Sanders/

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Lubrizol ESTANE® 58201 Ether Based Thermoplastic Polyurethane (European Grade)

Categories: Polymer; Thermoplastic; Elastomer, TPE; Polyurethane, TP; Thermoplastic Polyurethane, Elastomer, Ether Grade

Material Notes: **Description:** Estane® thermoplastic polyurethanes (TPUs) include elastomeric materials that bridge the gap between flexible rubber and rigid plastics. These materials offer unmatched toughness and durability in a flexible thermoplastic elastomer system that is easy to process in a wide range of equipment. The Estane® TPU portfolio of products offers high performance polyester - and polyether - based resins and compounds in a broad range of hardnesses to meet a variety of application needs.

Benefits of Estane® TPU:

- Outstanding Abrasion and Wear Resistance
- Excellent Low Temperature Flexibility
- Superior Toughness and Durability
- Ease of Processing and Manufacturing Flexibility
- Colorability and Paintability with no adhesion promoter

Applications:

- Film & Sheet
- Fabric coating & melt coating
- Wire & Cable
- Hose, Tube & Profile
- Custom molding
- Custom compounding
- Automotive interior/chassis and exterior painted trim

Information provided by Noveon, Inc.

Vendors: No vendors are listed for this material. Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Specific Gravity	1.11 g/cc	1.11 g/cc	DIN 53479
Mechanical Properties	Metric	English	Comments
Hardness, Shore A	82	82	DIN 53505
Tensile Strength, Ultimate	39.0 MPa	5660 psi	DIN 53504
Elongation at Break	680 %	680 %	DIN 53504
50% Modulus	0.00380 GPa	0.551 ksi	DIN 53504
100% Modulus	0.00460 GPa	0.667 ksi	DIN 53504
300% Modulus	0.00710 GPa	1.03 ksi	DIN 53504
Tear Strength	45.0 kN/m	257 pli	DIN 53515
Abrasion	45.0	45.0	mm ³ ; DIN 53516
Compression Set	28.0 %	28.0 %	70 hrs./22°C; DIN 53517
	71.0 %	71.0 %	24 hrs./70°C; DIN 53517
Thermal Properties	Metric	English	Comments
Vicat Softening Point	60.0 °C	140 °F	A50; DIN 53460
Brittleness Temperature	-70.0 °C	-94.0 °F	DIN 53546

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your

calculations to minimize rounding error. We also ask that you refer to MatWeb's [terms of use](#) regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.

Lubrizol ESTANE® 58271 Ester Based Thermoplastic Polyurethane

Categories: Polymer; Thermoplastic; Elastomer, TPE; Polyurethane, TP; Thermoplastic Polyurethane, Elastomer, Polyester Grade

Material Notes: **Description:** Estane® thermoplastic polyurethanes (TPUs) include elastomeric materials that bridge the gap between flexible rubber and rigid plastics. These materials offer unmatched toughness and durability in a flexible thermoplastic elastomer system that is easy to process in a wide range of equipment. The Estane® TPU portfolio of products offers high performance polyester - and polyether - based resins and compounds in a broad range of hardnesses to meet a variety of application needs.

Benefits of Estane® TPU:

- Outstanding Abrasion and Wear Resistance
- Excellent Low Temperature Flexibility
- Superior Toughness and Durability
- Ease of Processing and Manufacturing Flexibility
- Colorability and Paintability with no adhesion promoter

Applications:

- Film & Sheet
- Fabric coating & melt coating
- Wire & Cable
- Hose, Tube & Profile
- Custom molding
- Custom compounding
- Automotive interior/chassis and exterior painted trim

Specific Notes for this Material: Good flexibility and durability

Information provided by Noveon, Inc.

Vendors: No vendors are listed for this material. Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Specific Gravity	1.21 g/cc	1.21 g/cc	ASTM D792
Mechanical Properties	Metric	English	Comments
Hardness, Shore A	85	85	ASTM D2240
Tensile Strength, Ultimate	41.4 MPa	6000 psi	ASTM D412/D638
Elongation at Break	550 %	550 %	ASTM D412/D638
Flexural Modulus	0.0310 GPa	4.50 ksi	ASTM D790
Taber Abrasion, mg/1000 Cycles	2.50	2.50	CS-17; ASTM D3389 B
Compression Set	23.0 %	23.0 %	ASTM D395
Tensile Set	11.0 %	11.0 %	ASTM D412/D638
Thermal Properties	Metric	English	Comments
Vicat Softening Point	70.0 °C	158 °F	ASTM D1525
Transformation Temperature	-31.7 °C	-25.0 °F	by DSC

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